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great; for example, what chemical considerations can be adduced to explain why the central nervous tissues react differently to bromide and chloride, while to the other tissues these are almost equally indifferent; or how can the known chemical differences between potassium and sodium be brought into relation with the fact that they differ in their effects in almost every form of living tissue?

Less attention has been paid to the other factor in the reaction, the properties of the living tissue which lead one cell to react to a poison, while another fails to do so. I have pointed out some curious relations between different organs, but much needs to be done before any general view can be obtained. Further detailed examination of the exact point at which poisons act, and much greater knowledge of the physical characters of the drugs themselves and of the relation of colloid substances to these characters, are needed. We must attempt to classify living tissues in groups not determined by their morphological or even functional characters, but by their ability to react to chemical agents. Advance is slow, but it is continuous, and if no general attack on the problem is possible as yet, our pickets are at any rate beginning to give us information as to the position of the different groups to be attacked. And when a sufficient number of these qualitative reactions have been ascertained for any form of living matter, it may be possible for some Darwin to build a bridge from the structural chemistry of the protein molecule to the reactions of the living cell. We can only shape the bricks and mix the mortar for him. And my purpose to-day has been to indicate how the study of the effects of drugs on the living tissue may also contribute its mite towards the great end.

A. R. CUSHNEY

FIELD MEETINGS OF THE ASSOCIATION OF AMERICAN STATE GEOLOGISTS

THE state geologists of Connecticut, Florida, Illinois, New Jersey, New York, North Carolina, Ohio, Oklahoma, West Virginia and Wisconsin, the director and chief geologist of the Federal Survey, together with the staff of the New York Geological Survey and a few invited guests were in attendance on some or all of the field meetings of the Association of American State Geologists on September 4 to 9. The meetings were held in New York state by invitation of the director of the New York Geological Survey, Dr. John M. Clarke.

September 4-5. The field meetings began September 5 after a preliminary meeting on the previous evening in the office of the director in the State Museum at Albany. The first excursion was by autobus to the Indian Ladder of the Helderberg escarpment, where the classic Helderberg section is well developed. The more refined subdivisions were pointed out by Dr. J. M. Clarke, Dr. R. Ruedemann and Dr. E. O. Ulrich, and the reasons for the subdivisions and for some recent changes in nomenclature were discussed. Contacts between the Indian Ladder beds (Hudson River) and Brayman shales, and between the Brayman shales and Manlius limestone were studied and the cause of the brecciated character of the beds was considered.

The karst topography developed where the Onondaga limestone reaches the surface was seen as the party motored to Thompson's Lake. This lake is believed to rest in a solution basin from which the water drains through underground passages.

At Altamont the party was most agreeably entertained at tea by Mrs. John Boyd Thacher, donor to the state of New York of the Helderberg escarpment, of which the Indian Ladder is the most picturesque portion and which is known as the John Boyd Thacher Park. In the evening the party assembled in the office of the director of the New York Survey for a conference.

September 6. Wednesday morning the party went by train to Saratoga Springs, where it

was met by the superintendent, Mr. Jones, the engineer, Mr. Anthony, and Dr. Ferris, of the Mineral Springs Reservation, under whose guidance the various springs and the fault along which they occur were seen. The structural features of the region and the relation of the fault to the underground water was pointed out by members of the New York Geological Survey. The party then proceeded to the remarkable Cryptozoan ledge (property of the State Museum) which is a glaciated algal reef consisting of several beds of cabbage-like, calcareous algæ in the Hoyt limestone (Upper Cambrian).

A delightful luncheon was tendered the geologists by Mrs. J. Townsend Lansing at Saratoga. In the afternoon a visit was made to historic Crown Point on Lake Champlain with its ruins of Fort St. Frederic (1731) and Fort Amherst (1759), the latter being one of the most important colonial fortifications, said to have cost 2,000,000 pounds. On the parade grounds and in near-by exposures Ordovician rocks with their contained fossils were studied.

September 7. Thursday morning was spent at Mineville where, through the courtesy of the Witherbee, Sherman Co., the members of the party were given an opportunity to visit some of the underground workings of the great magnetite deposits. The magnetite bodies occur in lenses, sheets and pods, surrounded by light-colored gneiss and syenite, and yield both concentrating and high-grade ores, with low and high phosphorus content. The output of the mines is more than 1,000,000 tons a year, not including apatite, which as a by-product is manufactured for fertilizer.

In the afternoon exposures of the Precambrian showing faulting, folding and other complexities of structure were seen under the direction of Assistant State Geologist D. H. Newland. The complex relations of the various gneisses and schists, Grenville limestones, syenite, gabbro and trap dikes were studied in most extraordinary exposures along the Delaware and Hudson railroad track.

At an informal meeting Friday evening at Port Kent, among other questions of general

interest, the following topics were discussed: the advisability of encouraging technical schools to require a more adequate training in geology for civil engineers; the necessity of bringing to the attention of the officers of the regular army and militia the importance of a thorough understanding of topographic maps as an essential preparation for military maneuvers; the desirability of offering to the government the services of the state surveys in preparations for national defense.

September 8. The party left Port Kent, where the night had been spent, for the picturesque Ausable Chasm, a post-glacial gorge in Potsdam sandstone, whose course has been determined in large measure by faulting and jointing.

By invitation of the Rt. Rev. Mgr. John P. Chidwick, president of the Catholic Summer School at Cliff Haven on Lake Champlain, the geologists were guests of the school for luncheon at the Champlain Club.

An interesting fourchite dike near the summer school and fine exposures of the Chazy and Beekmantown limestones occupied the time of the party until it was taken by Professor G. H. Hudson to Valcour Island. Under his guidance it was made possible to see the results of his investigations of the fault problems of the island. Interformational breccias, storm tossed reef masses, and tornado records are also among the interesting geological features shown. Professor and Mrs. Hudson gave a camp supper to the members of the party, a feature which added a particularly enjoyable evening to a day full of pleasure and profit. At its close the party went to Plattsburg, where the night was spent aboard the steamer *Vermont*, preparatory to the trip to Burlington in the morning.

September 9. At Burlington, Vermont, the party broke up, some returning home and some remaining with Professor G. H. Perkins, under whose guidance they saw the great overthrust fault on the shore of Lake Champlain near Burlington, in which light-colored Cambrian sandstones overlie black Utica shales; the buildings and museum of the University of Vermont; and finally the great

marble quarries at West Rutland, to which they were taken in automobiles furnished through the courtesy of the Vermont Marble Company.

The great success of these field meetings was due not only to the region traversed, which is unusually interesting geologically and historically, but also to the care with which every detail was planned and executed, and the pains which the director of the New York State Geological Survey and his staff took to provide for the comfort and pleasure of the party.

This report was written at the request of the busy secretary of the association, Dr. W. O. Hotchkiss, by the undersigned guest of the association.

HERDMAN F. CLELAND

WILLIAMSTOWN, MASS.

THE NEWCASTLE MEETING OF THE BRITISH ASSOCIATION

WE learn from the account of the meeting in *Nature*, that the attendance was 626, the smallest since the first meeting held in York in 1831. It is said, however, that the attendance at the meetings of the sections was quite up to the average.

The general committee adopted a recommendation of the council that research committees should have power to report through organizing committees of sections to the council at any time when the association is not in annual session. Hitherto research committees have had to await the annual meeting before presenting their reports, even when their conclusions call for early action. Under the new rules this will no longer be necessary if the organizing committee to which a research committee presents its report considers it desirable to report direct to the council. Another alteration of the rules of the association makes it possible for the council to include upon research committees persons who are not members of the association, but "whose assistance may be regarded as of special importance to the research undertaken."

The general treasurer has reported to the council that Mr. M. Deshumbert proposed to leave a legacy of about £5,000 to the associa-

tion, subject to the condition that his wife and her sister should receive the interest during their lifetime.

The new members of council elected by the general committee are Mr. R. A. Gregory, Dr. S. F. Harmer, Dr. E. J. Russell, Dr. A. Strahan and Professor W. R. Scott. An invitation to meet in Cardiff in 1918 was unanimously and gratefully accepted by the committee.

The total grants of money appropriated by the general committee for purposes of research committees proposed by the various sections amounted to £602. The subjects and grants are as follows:

Section A.—Seismological observations, £100; annual tables of constants, £40; mathematical tables, £20; gravity at sea, £10.

Section B.—Dynamic isomerism, £15; Eucalypts, £30; absorption spectra, etc., of organic compounds, £10.

Section C.—Red Sandstone rocks of Kiltorecan, £4; Paleozoic rocks, £20.

Section D.—Biology of the Abrolhos Islands, £6; inheritance in silkworms, £20.

Section F.—Fatigue from an economic point of view, £40; replacement of men by women in industry, £20; effects of war on credit, etc., £10.

Section G.—Stress distributions, £40.

Section H.—Artificial islands in the lochs of the Highlands of Scotland, £5; physical characters of ancient Egyptians, £2, 12s. (unexpended balance); Paleolithic site in Jersey, £30; excavations in Malta, £20; distribution of Bronze age implements, £1, 14s. (unexpended balance).

Section I.—Ductless glands, £15; psychological war research, £10.

Section K.—Physiology of heredity, £45; ecology of fungi, £8.

Section L.—School book and eyesight, £5; work of museums in education and research, £15; effects of "free-place" system upon education, £15; science teaching in secondary schools, £10; mental and physical factors involved in education, £10.

Corresponding Societies' Committee.—For preparation of report, £25.

SCIENTIFIC NOTES AND NEWS

SIR CHARLES PARSONS, the engineer, has been elected president of the British Association for the meeting to be held at Bournemouth in September next.